**Rationalising surds, Completing the Square**

1. **Conjugate Surds:** is the conjugate of , and vice versa, and

is the conjugate of , and vice versa.

When rationalising surds (i.e. changing the denominator of a fraction to a rational number), multiply the top and bottom of the fraction by the conjugate of the denominator:

**Example 1: Write with a rational denominator.**

Multiply the top and bottom by the conjugate of the denominator, i.e. .

= = = =

**Example 2: Write with a rational denominator.**

Multiply the top and bottom by the conjugate of the denominator, i.e. 2.

= = = =

Delta: Exercise 28.6 page 263

1. **Completing the Square**

**Example 1: Complete the square for the expression .**

=  *adding the square of half the coefficient of x, but*

*also subtracting to balance out the expression*

=

= *factorising*

**Example 2: Complete the square for the expression .**

= *taking out the coefficient of as the common factor*

=

=

=

=

**Example 3: Solve by completing the square.**

*bring constant over to the RHS*

*add square of half the coefficient of x to both sides*

*factorising*

**Example 4: Solve by completing the square.**

*bring constant over to the RHS*

*divide both sides by coefficient of*

*add square of half the coefficient of x to both sides*

Delta: Exercise 29.2 page 269 Q4, 5.

Homework: Delta Ex 3.3 pg 44 Q26, Ex 3.4 pg 45 Q1-10 (solving log and index eqns)